

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT TRANSMITTAL

Patent No.: 6,614,143

Issued: September 2, 2003

Name of Patentee: The Penn State Research Foundation

Title of Invention: CLASS V FLEXTENSIONAL TRANSDUCER WITH
DIRECTIONAL BEAM PATTERNS

Customer No.: 27,623

Attorney Docket No.: 823.0130USU

Certificate

FEB 11 2004

Mail Stop Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

of Correction

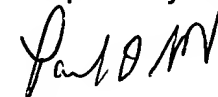
Dear Sir:

We are enclosing:

1. Request for Certificate of Correction of Patent for PTO Mistake under 37 CFR 1.322(a);
2. Copy of an Amendment, filed on January 22, 2003;
3. PTO Form 1050 in duplicate;
4. Transmittal Letter in duplicate; and
5. Postcard.

Please charge any additional fees or credit any such fees, if necessary to Deposit Account No. 01-0467 in the name of Ohlandt, Greeley, Ruggiero & Perle. A duplicate copy of this sheet is attached.

Respectfully submitted,



Paul D. Greeley
Reg. No. 31,019

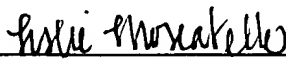
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square, 10th Floor
Stamford, CT 06901-2682
Tel. (203) 327-4500

Date: February 3, 2004

CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE U.S. POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: MAIL STOP: CERTIFICATE OF CORRECTION BRANCH, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 ON February 3, 2004.

Leslie Moscatello
NAME


SIGNATURE

2/03/04
DATE

12 FEB 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT TRANSMITTAL

Patent No.: 6,614,143
Issued: September 2, 2003
Name of Patentee: The Penn State Research Foundation
Title of Invention: CLASS V FLEXTENSIONAL TRANSDUCER WITH
DIRECTIONAL BEAM PATTERNS
Customer No.: 27,623
Attorney Docket No.: 823.0130USU



Mail Stop Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

We are enclosing:

1. Request for Certificate of Correction of Patent for PTO Mistake under 37 CFR 1.322(a);
2. Copy of an Amendment, filed on January 22, 2003;
3. PTO Form 1050 in duplicate;
4. Transmittal Letter in duplicate; and
5. Postcard.

Please charge any additional fees or credit any such fees, if necessary to Deposit Account No. 01-0467 in the name of Ohlandt, Greeley, Ruggiero & Perle. A duplicate copy of this sheet is attached.

Respectfully submitted,

Paul D. Greeley
Reg. No. 31,019
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square, 10th Floor
Stamford, CT 06901-2682
Tel. (203) 327-4500

Date: February 3, 2004

CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE U.S. POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: MAIL STOP: CERTIFICATE OF CORRECTION BRANCH, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 ON February 3, 2004.

Leslie Moscatello
NAME

SIGNATURE

2/03/04
DATE

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

PATENT NO.: 6,614,143
DATED: September 2, 2003
INVENTORS: Jindong Zhang and Robert E. Newnham

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 9

Line 44, in Claim 4, "materials" should read --material--.

Column 9

Lines 62 to 65, in Claim 9, the phrase: "wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion" should be deleted; and

should be replace by: --second electro active substrates each having a second opposed planar surface joined to an endcap having a truncated conical shape, said method comprising: applying a first electrical field to a said first electro active substrate; applying a second electrical field to said second electro active substrate, wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion, thereby producing said directional beam. --

Column 10

Line 17, in Claim 15 "respectively," should read --respectively.--

Lines 18 to 29, in Claim 15 should be deleted.

MAILING ADDRESS OF SENDER:

Patent No.: 6,614,143

Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square, 10th Floor
Stamford, Connecticut 06901-2682

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

1 2 FEB 2004

PATENT NO.: 6,614,143

DATED: September 2, 2003

INVENTORS: Jindong Zhang and Robert E. Newnham

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 9

Line 44, in Claim 4, "materials" should read --material--.

Column 9

Lines 62 to 65, in Claim 9, the phrase: "wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion" should be deleted; and

should be replace by: --second electro active substrates each having a second opposed planar surface joined to an endcap having a truncated conical shape, said method comprising: applying a first electrical field to a said first electro active substrate; applying a second electrical field to said second electro active substrate, wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion, thereby producing said directional beam. --

Column 10

Line 17, in Claim 15 "respectively," should read --respectively.--

Lines 18 to 29, in Claim 15 should be deleted.

MAILING ADDRESS OF SENDER:

Patent No.: 6,614,143

Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square, 10th Floor
Stamford, Connecticut 06901-2682

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Zhang et al.

Serial No. 09/942,272

Filed: FEB 05 2004 August 29, 2001

For: CLASS V FLEXTENSIONAL TRANSDUCER WITH
DIRECTIONAL BEAM PATTERNS

Art Unit: 2834

Examiner: Medley, P.M.

Attorney Docket: 823.0103USU

AMENDMENT UNDER RULE 116

BOX AF
Commissioner for Patents
Washington, D. C. 20231

Sir:

In reply to the final Office Action dated August 28, 2002, please amend the above patent application as follows:

IN THE CLAIMS

Please amend the claims as follows:

1. (Twice amended) An electro active device for generating a directional beam comprising:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed surfaces have a polarity and each of said second opposed surfaces have an opposite

polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate;

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion generating said directional beam.

10. (Amended) A method for generating a directional beam utilizing an/electro active device comprising first and second electro active substrates each having first opposed planar surfaces of the same polarity in close contact, said first and

second electro active substrates each having a second opposed planar surface joined to an endcap having a truncated conical shape, said method comprising: applying a first electrical field to a said first electro active substrate; applying a second electrical field to said second electro active substrate, wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion, thereby producing said directional beam. /

17. (Amended) A vibration production system comprising:

a plurality of electro active devices for generating a directional beam of vibration arranged in an array, each electro active device having:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed surfaces have a polarity and each of said second opposed surfaces have an opposite polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate; and

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes of said electro active devices; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes of said electro active devices, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that each of said electro active devices produces a combined flexural and bending motion generating a directional beam.

REMARKS

Claims 1-8 and 10-17 are pending in the application. Claims 1, 10 and 17 have been amended. Reconsideration of this application is respectfully requested.

Applicants greatly appreciate the Examiner granting an interview to Dr. Robert Newnham and his attorneys on January 15, 2003. During the interview, the Examiner indicated that claim 10 and its dependent claims 11-16 are allowable and that claims 1 and 17 would be allowable if amended to recite that the second circuitry is independent of the first circuitry.

Claims 1 and 17 have been amended to recite that the second circuitry is independent of the first circuitry and, therefore, are allowable. Also, claims 2-8, which are dependent on allowed claim 1, are, therefore, now allowable. Thus all of the claims 1-8 and 10 –17 are now allowed.

Since all of the claims are now allowed, it is submitted that the rejection of claims 1-8 and 10-17 under 35 U.S.C. 102 (b) is moot and should be withdrawn.

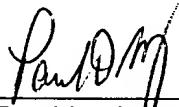
Attached hereto is a marked-up version of the changes made to the specification and claims by the present amendment. The attachment is captioned "Version With Markings To Show Changes Made."

It is respectfully requested for the reason set forth above that the rejection under 35 U.S.C. 102(b) be withdrawn, that claims 1-8 and 10-17 are allowed and that this application be passed to issue.

For the reasons set forth above, it is submitted that this amendment places the application in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and passed to issue. If this amendment is deemed to not place the application in condition for allowance, it is respectfully requested that it be entered for the purpose of appeal.

Respectfully Submitted,

Date: 1-22-03



Paul D. Greeley
Reg. No. 31,019
Attorney for Applicant(s)
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square, 10th Floor
Stamford, CT 06901-2682
(203) 327-4500

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Application, Serial No. 09/942,272

IN THE CLAIMS

Please amend the claims as follows:

1. (Twice amended) An electro active device for generating a directional beam comprising:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed surfaces have a polarity and each of said second opposed surfaces have an opposite polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate;

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion generating [a] said directional beam.

10. (Amended) A method for generating a directional beam utilizing an electro active device comprising first and second electro active substrates each having first opposed planar surfaces of the same polarity in close contact, said first and second electro active substrates each having a second opposed planar surface joined to an endcap having a truncated conical shape, said method comprising: applying a first electrical field to a said first electro active substrate; applying a second electrical field to said second electro active substrate, wherein said first and second electrical fields have an amplitude and phase relationship such that said electro active device produces a combined flexural and bending motion, thereby producing said directional beam.

17. (Amended) A vibration production system comprising:

a plurality of electro active devices for generating a directional beam of vibration arranged in an array, each electro active device having:

first and second electro active substrates each having first and second opposed continuous planar surfaces wherein each of said first opposed

surfaces have a polarity and each of said second opposed surfaces have an opposite polarity, wherein said first opposed surfaces of said first and second electro active substrates are in close contact;

a first electrode coupled to a junction formed by said first opposed surfaces having the same polarity;

a second electrode coupled to said second opposed surface of said first electro active substrate;

a third electrode coupled to said second opposed surface of said second electro active substrate;

a first endcap joined to said second opposed surface of said first electro active substrate; and

a second endcap joined to said second opposed surface of said second electro active substrate;

first circuitry for applying a first electric field across said first and second electrodes of said electro active devices; and

second circuitry independent of said first circuitry for applying a second electric field across said first and third electrodes of said electro active devices, said second electrical field having a phase relationship with said first electrical field, wherein the application of said first and second electrical fields causes an amplitude and phase relationship such that each of said electro active devices produces a combined flexural and bending motion generating a directional beam.